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JPRS: 19,271

ABSTRACTS PERTAINING TO COMMUNIST CHINA

IN SOVIET ABSTRACTS JOURNALS

No. 60.

(Astronomy Series)

This serial publication contains translations of abstracts pertaining to Communist China published in Referativnyy Zhurnal, Astronomiya (Soviet Abstracts Journal, Astronomy Series), No 11, 1962.

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RZh Astronomiya
11-62

Abst#11A379

Astronomy/Radioastronomy

TSINO Jung-bao

Observation of Source Sagittarius A at a Frequency of 1,500 Megacycles per Second

Astron zh (Journal of Astronomy) 1962, 39, No 1 pp 166-168 (English summary)

The author's model was constructed on the basis of data obtained by him on radiation of the source Sagittarius A at a frequency of 1,500 megacycles per second ($F_v = 1260 \cdot 10^{-26}$ watt/m² c p s, $\phi = 0.037$). Appraisals of a number of stars of various spectral classes, necessary for the excitation of the source, are cited. Nine references.

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RZh Astronomiya
11-62

Abst#11A427

Sun
Astronomy/Photosphere
Chromosphere

YEH Shih-huei

Investigation of Excitation and Ionization of Hydrogen in Solar Protuberances

Izv Krymsk astrofiz observ (News of the Krim Astrophysical Observatory) 1961, 25, pp 234-248 (English summary)

The theoretical analysis of experimental data published previously by author is presented. In order to appraise the role of the various elementary processes from the experimental data on the number of atoms in luminous radiation, the concentrations were computed for one of the protuberances on the basis of the assumption that the linear width of the protuberance is 10^9 cm. The following were calculated for various levels in the function of electronic concentration n_e and concentration of the neutral hydrogen n_1 : the photoionization and the photoexcitation, the excitation, attenuation, and ionization by electronic shock; the number of the spontaneous transitions and photorecombinations. The author disregards the ionization engendered by the short wave radiation of the corona and transition layer as well as the photoexcitation of the

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Abst#11A427 (cont'd)

third degree engendered by photospheric radiation. The results of the computations are shown in tables. The equation system for stability is solved; it is presumed here that the number of spontaneous transitions L is balanced by the photoexcitation and the number of the photoionizations is equal to the number of the photorecombinations. We obtained: $n_2 = 1.22 \cdot 10^{11} \text{ cm}^{-3}$ and $n_1 = 4.8 \cdot 10^{11} \text{ cm}^{-3}$ which is greater than n_2 by 6 orders. It was found that in the results obtained the number of photoionizations was equal to the number of photorecombinations. A graphic comparison of the efficiency of the various processes for various levels is shown. The following conclusions are drawn: 1) the excitation of hydrogen atoms in the protuberances is determined mainly by their own radiation; 2) the excitation by their own radiation and the spontaneous transitions almost fully compensate one another; 3) high-grade ionization of the hydrogen atoms is chiefly caused by electronic shock, while photoionization plays a great role in low-grade ionization; 4) the congestion of the high grades is caused by recombination; 5) excitation by electronic shock and lessening of collision play a relatively unimportant role. The conclusions tally well with the initial assumptions accepted in the investigations of the elementary processes. Six references. G. Ivanov-Kholodnyy

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